## REMARKS

Claims 2-3, 5-7, 9-10, 12, 14-16, 18-19, 30-31 and 33-35 were previously pending and all stand rejected under §103. Claims 30-31 are canceled here, new Claims 36-37 added, and the other claims amended in terms of dependency only.

Rejections

The Examiner rejected all the claims citing Hogan in view of Maenza and further in view of Menezes.

In pertinent part the Examiner stated:

> As per claims 30-31, Hogan discloses providing data patterns on the disc arranged such that the patterns cannot be accurately copied onto another disc by a writer for recordable discs which has a limited ability to look ahead during encoding, wherein the data patterns have a DSV (digital sum value) which has a rapid rate of change over time wherein the transition in the EFM (eight to fourteen modulation) signal from the data patterns are shifted from their ideal values or the ability of disc drives to maintain optimal head positioning is comprised...; the data patterns making up a signature...; wherein the data patterns of the signature and other data are applied to the optical disc using a laser beam recorder controlled by an encoder which has a larger ability to look ahead than the writer and thus can be controlled to accurately write the signature to the disc...

The other references were cited to show, in Maenza, employing authenticating signature techniques in a mastering process. Menezes was cited to show use of scrambled data patterns to make an authentication signature and use of the XOR function to scramble data.

New Feature in Claims

New independent Claims 36 and 37, submitted in place of now canceled independent Claims 30 and 31, are directed to a feature not before explicitly claimed. See the published specification at paragraph 82 in column 5:

> The data patterns intended to provide an authenticating signature are XOR'd with the same pattern of scrambling data as is used in the scrambling process indicated at 18. [This refers to FIG. 4, reference numeral 18.] This scrambled data is then subjected to the process indicated in FIG. 4. It will be appreciated that when the scrambled data is subjected to the XOR algorithm on encoding, each byte from the sector will be returned to its original value.

This is directed to the FIG. 4 process. This shows how the initially XOR'd scrambled data is then subject to conventional encoding, including the EFM encoding with its conventional scrambling which is intended to eliminate DSV problems in conventional data.

This conventional encoding and scrambling, which is part of conventional EFM, is what Hogan discloses, see column 3 beginning line 55 as referred to by the Examiner:

> The special encoder makes one or more non-optimal (over the short term) choices of channel bits, placing the encoder into a state that prevents a long term propagation of states leading to a large accumulated DSV.

Hence this conventional scrambling prevents DSV violations and is conventional in EFM encoding.

However in accordance with the present invention as stated at specification paragraph 82, to ensure that there are indeed DSV problems when the optical disc is copied, an initial XOR scrambling process is done on the already corrupted (DSV problematic) data. Then when the conventional EFM scrambling is done, which is intended to eliminate DSV problems, instead this brings forth the DSV problems in the originally corrupted data.

Hence in accordance with the invention, two XOR scrambling processes are provided. The first is done on the DSV corrupted data patterns, which effectively eliminates the DSV problems. Then the second scrambling process which is the same as the first scrambling process, both being XORs, restores the DSV problems in the supposedly corrected data. Hence there are two XOR scramblings here and due to the nature of such scrambling, the original data being subject to

two consecutive scramblings is restored to its original state, that is its corrupted or DSV problematic state.

Hogan

Hogan does not disclose this. Hogan does, according to the Examiner, suggest providing corrupted data on the disc to cause DSV problems. The Examiner cited Hogan at column 3 and columns 5 and 6; for instance see Hogan column 6 beginning line 58 "The second embodiment is a variation of the first embodiment, also exploiting symbol sequences that lead to DSV violations." Hence there is some type of DSV violation disclosed in Hogan. However Hogan does not disclose exactly how he arrives at the data which provides the needed DSV violations on his disk. He merely indicates some sort of selection process. See for instance Hogan column 6 beginning line 64 "Then, encoder 108 can be externally directed, for example by a processor, to substitute some other symbol for symbol 132. This substitute symbol is carefully chosen to bias the encoder 108 to choose state 3 for symbol 220, as in FIG. 3B. ...Then, any further encoding by standard encoders will be as in FIG. 3A, leading to a large accumulated DSV."

Thus while arguendo Hogan discloses causing DSV problems, he does not indicate how he processes his original data to make sure that he does have the DSV problems on the disc when played. He merely indicates this is done by the "processor".

Present Claims Distinguish Over Hogan and Other References

Therefore the process and resulting disc disclosed in present paragraph 82 and FIG. 4 and now recited in each of new independent Claims 36 and 37 clearly distinguish over Hogan.

Claim 36 to a large extent includes the same subject matter as earlier method Claim 30, now canceled. Claim 36 additionally recites explicitly that there are two scrambling processes, both using the same XOR scrambling algorithm, see Claim 36 beginning line 8:

> subjecting the data patterns to a first exclusive (XOR) scrambling algorithm;
>
> applying the scrambled data patterns of the authenticating signature and other data to the optical disc in a mastering process, the mastering process including: ...
>
> > encoding the scrambled data patterns using EFM (eight to fourteen modulation) with a second XOR scrambling algorithm having the same pattern of scrambling data as the first XOR scrambling algorithm; and
> >
> > applying the twice scrambled data patterns and the other data to the optical disk; ... (emphasis added)

Thus in accordance with the invention, the data patterns are subject in sequence to two essentially identical XOR scrambling algorithms using the same scrambling pattern. Since these are both XOR, this results in restoration of the original data which is of a type to cause DSV problems, as recited in the first clause in the body of Claim 36.

Hence the resulting data patterns on the optical disk do cause DSV problems even having been subject to conventional encoding which is intended to prevent same.

As stated above, Hogan does not meet this. Hogan leaves up in the air how he arrives at data patterns which when EFM encoded result in corrupted data patterns causing the desired DSV problems. Presumably this is done by some sort of processing, but Hogan does not indicate use of dual XOR scrambling. This dual scrambling is a very efficient approach since the XOR scrambling algorithm is applied quickly without requiring extensive logic or processing time, since it is a simple logical conversion. Note that a very large amount of data typically must be processed here since the corrupted DSV patterns must be provided throughout the entire amount of data on the disc in order to cause DSV corruption and thus prevent copying. The process used by Hogan is vague in terms of disclosure and also not so simple since it requires some consideration or selection or even human intervention. Moreover, Hogan does not specify how this would even taken place so as to survive conventional EFM encoding.

Thus the Claim 36 approach is not disclosed in Hogan, and further has advantages over the suggested approach of Hogan in terms of being more efficient and simpler.

Hence Claim 36 distinguishes over Hogan, even in combination with the other cited references.

The claims dependent upon Claim 36, which were the claims previously dependent upon Claim 30, include Claims 2, 3, 5-7, 9, 10, 34 and 35 and are similarly allowable as the base claim.

New apparatus Claim 37 substitutes for canceled Claim 31. Claim 37 is directed to similar subject matter as Claim 36 in terms of use of the two XOR scrambling algorithms to provide the data written onto the disc. Claim 37 is otherwise directed to similar subject matter as earlier Claim 31, but includes this dual scrambling feature and thus is similar to Claim 36. Claim 37 thus distinguishes over Hogan, even in combination with the other cited references, for at least the reasons pointed out above in reference to Claim 36.

Claims 12, 14-16, 18 and 19 are dependent upon Claim 37 and allowable for at least the same reason as base Claim 37.

## CONCLUSION

Therefore it is respectfully submitted that all pending claims in this case are allowable and allowance thereof is requested. This Amendment is entitled to entry, being filed with an RCE. This Amendment is filed under Rule 34. The correspondence address remains that of Macrovision Corporation.

In the event that the U.S. Patent and Trademark Office determines that an extension of time and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or fees due in connection with the filing of this paper to the undersigned's **Deposit Account No. 03-1952** referencing docket no. 136922003800.

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Respectfully submitted,

By _____

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